GENERAL INTELLIGENCE.

Fawkes's Steam Plow.

We have, on two occasions previously, alluded to this new invention, but its importance is such that we again refer to it more fully while the machine is among us, (at Hamilton Park) for exhibition, in order that such of our readers as are disposed can examine it for themselves. When it is borne in mind that the general introduction of the steam plow, with all improvements which time and experience may add, must eventually reduce the cost of flour from $6 to $2 per barrel, and other necessaries of life in proportion; that it will make one farmer, with a few assistants, to do the work heretofore done by six; that the vast prairies of the west will be the future favorite fields of its triumph, on which acres of ground, converted by the million, may be made to blossom with crops for Europe and ourselves, and that the advantages which we possess, both in land and its intelligent use, will eventually place us as far ahead in the grain, as we always stood in the cotton crop; all these circumstances being considered, the first successful steam plow ranks in importance with the power-loom, the cotton gin, the steam engine, and other kindred inventions.

At its recent exhibition in Chicago, the machine plowed at the rate of an acre in twelve minutes, and can break up from 25 to 40 acres per day. The cost of fuel and attendance is estimated at $16 per day, including interest on the cost, $4.000. The actual cost of breaking prairie with it would therefore be but 64½ cents per acre; the present contract price for breaking with the common plow is $2 50 per acre. When not used as a plow, the engine can be used as a stationary engine for driving the thresher, the feed mill, or the wood saw. The whole machine weighs ten tons.

The following is the report of the Committee at the National Fair, awarding the premium to Fawke's plow, and giving a description of others which competed on that occasion. It will be commended for its fair, impartial and moderate tone:—

REPORT.

To the Hon. Executive Committee:

Gentlemen—The undersigned, a Committee to whom were confided the trial of steam plows, and other substitutes for the plow as now used, respectfully report that the following implements and machines were offered for examination:—

By John Deere, of Moline, Ill., a Double Michigan Plow.

By John Van Doren & Co., of Chicago, substitute for the Plow.

By B. F. Field, Milwaukee, Wis., a substitute for the Plow.

By Joseph W. Fawkes, Lancaster, Pa., Steam Plow.

By James Waters, Detroit, Mich., Steam Plow.

The first of these, although offered as "the best pulverizer of the soil," is nothing but an ordinary plow, double, it is true, but still a plow to be drawn by horses or oxen in the usual way, and therefore not within scope of the award.

The second is a rotary cultivator, driven by steam, and self-propelling. Besides plowing, it may be applied to other uses, such as harvesting grain, cutting grass, and, having a pulley of suitable dimensions, may be used as stationary power for farm machinery. This machine was at work at various times on the Fair grounds, but when the Committee sent official notice that they were ready to test it in detail, the owner could nowhere be found, and no opportunity was afterward afforded until the close of the exhibition. The result of our observations, however, was such that we do not think it worthy to compete, in its present condition, with the larger and more perfect machines on trial.

The third implement was a revolving plow and seeding machine. The machine turning as it travels forward, the spades coming behind, lift the earth as they emerge, and disturb its relative position as would a spade in the hands of a man, except that the soil is not inverted. Behind the spading apparatus, on the back part of the frame which surrounds the whole, is a row of ordinary drill sheaths, to deposit the seed in the ground which is fed to them by suitable hoppers with valves. The Committee made a careful examination of this "rotary plow," but did not feel authorized to award it the Grand Gold Medal of Honor.

These three being excluded, the competition was narrowed down to two competitors, viz.: Joseph W. Fawkes, of Christiana, Lancaster County, Pa., and James Waters of Detroit, Michigan, both exhibitors and inventors of steam plowing engines and apparatus.

The Fawkes machine is thus described by the Committee of Machinists who conducted the recent trials of steam plows at the Fair of the Illinois State Agricultural Society:

To form a complete conception of this steam plow, let the Committee recall the appearance of a small-sized tender of a locomotive engine. Let about half the forward portion of the sides and tank be removed. We now have something which resembles the body of Fawkes's machine. In the middle of the forward portion of the platform stands the upright boiler, which is about 6½ feet high and 4 feet in diameter, the fire-box and ash-pit being of course below the level of the platform, and the fire-door opening forward. The boiler contains 220 1½ inch tubes, which, computed together with the fire-box, gives 375 feet of fire surface. Steam may be got up in 15 minutes, although twice that time is usually necessary. The fuel may either be bituminous coal or wood. The cylinders are horizontal, 9 inches in diameter and 15 inches stroke, and are placed on each side of the boilers. The pistons communicate motion not to the side wheels, but to a drum or roller, 5 feet in diameter and 6 feet long, which, as the sides of the platform overhang its ends, is comparatively out of sight. The drum is placed about midway between the front and back of the machine; before it depends the fire box, and over and behind it is the tank, so that when the boiler and tank are full they nearly counterbalance each other on the axis of the driving drum.

This drum is composed of two iron heads, or 'spiders,' and an intermediate one; to these, thick narrow planks, cut like staves, and fitting closely, are bolted and form the periphery. The adhesion is, therefore, produced by a surface of wood six feet long, which never becomes polished, and the bearing of which is always across the grain. There is no slipping; the machine is started and stopped instantly; and, except when propelling itself a considerable distance on turnpike or paved roads, the wear and tear is slight. This substitution of the driving roller for the ordinary side-wheels, wonderfully increases traction, and prevents sloughing in wet or yielding soil; while moderate irregularities of surface scarcely affect the onward march of the plow. Another great advantage is gained by the gearing of the drum. Instead of being attached directly to a crank on the axle of the drum, each connecting rod communicates motion to a pinion which turns easily, but without shake on the axle just mentioned. The pinion interlocks with a cog-wheel which, by a pinion on its axis, imparts motion to the cog-wheel bolted to the drum. The whole being so proportioned that six strokes of the piston cause one revolution of the drum.

Increase of power and of control over the movements of the engines are secured.

In front of the fire box is a short tapering bow of sheet iron, which serves as a seat for the fireman and a receptacle for fuel. The bow is supported by a body-bolt on a truck composed of two iron guide-wheels, three and one-half in diameter and fifteen inches broad. The truck moves freely like the front wheels of a chaise, and is controlled by a steering wheel in charge of the engineer, so that the whole machine is turned as readily and as short as a farm wagon. The engine is of thirty horse power. The entire length of the machine is about 18 feet; its weight, with water and fuel, 10 tons; and cost, including 'donkey' engine and pump, about $4.000. By this pump water may be drawn from a well or creek, and the tank filled, or water forced from the tank to the boiler. The tank holds twelve barrels, sufficient for three hours running. The plows, eight in number, are attached to one frame, which is suspended by chains passing over grooved pullies in two beams, projecting from the seat of the engine.—These chains communicate to a windlass in charge of the fireman in front, by which a gang of plows may be raised or lowered at pleasure, and the frame of plows is drawn by other chains which are attached to the underside of the frame of the engine

Water's plow is entirely dissimilar in every respect, and may be thus described: It is a locomotive engine, with a horizontal boiler containing 96 two inch tubes. There are four cylinders, 5¾ inches in diameter, with 12-inch stroke, making 24 revolutions to one of the drivers. These are 10 feet in diameter, with a 26-inch face, made of light boiler iron, and with 8 iron spokes. Two steering wheels are placed in front, 5 feet in diameter, 12-inch face, turned by a worm and chain. The main axle is of 4-inch round iron, fitted with oil-tight boxes. The fire box is 2x3 feet, and is made for either wood or coal. The boiler is bolted to the axle by clamps, and in front by light iron braces rests upon the axles of the steering wheels. Motion is given the drivers by a pinion working in internal gears on the drivers, the pinion being turned by its wheel gearing into the engine-shaft direct. To prevent slipping, ribs of sheet iron are bolted on the face of the drivers, and set diagonally. A tank beneath the boiler holds 5 gallons of water, but a further supply of 15 barrels is carried in a two wheeled water cart attached to the engine. On the deck of this cart his fuel is carried. The plows, 13 in number, are in gangs, on two frames, which run on caster wheels. The gangs are hitched one behind the other, and both behind the water cart, making an entire train of 57 feet. The plows are not self-adjusting, but permanently attached to the frames. They are raised and lowered on each gang simultaneously, by a quick threaded screw.

The two machines were taken in hand by the Committee on Friday, and caused first to run twice around the half mile track of the show-grounds, the better to enable the assembled multitude to witness their locomotive capacity and outward mechanical construction. They were then made to turn a single furrow each within the inclosure, after which they were removed to a smooth level prairie, immediately adjoining the grounds. Each competitor was left free to choose the area of ground in which he could show his machine to greatest advantage, as there was an almost unlimited stretch of uninclosed land admirably suited to the purpose. Mr. Waters, from the length of his train of engine, tender, and two gangs of plows, making in all 57 feet, preferred plowing in a circle and on not less than a six-acre plot, while Mr. Fawkes expressed his willingness to take any sized field, even to a single acre, if the Committee so desired.

A portion of the Executive Board of the State Agricultural Society, wishing to test Mr. Fawkes's engine on a half-mile furrow, your Committee assented to the proposition, and rode upon the machine until he had plowed four furrows, of 2,340 feet in length, and 9 feet 4 inches in width, making, in all, 87 165 square feet, or a trifle over two acres. The furrows were turned to an average depth of five inches, and were of each single plow fourteen inches in width. The time consumed in turning the first through furrow was 9 minutes; the second, 8½ minutes; the third, 8 minutes; the fourth, 10 minutes. In passing up the first furrow, once on the next, and once on the last, the plows were clogged by the sods getting crosswise in the gang, and the machine stopped to clean them out, occupying in all 17 minutes for cleaning out and turning at the end of furrows. On the last home stretch, at a distance of 280 yards from the end, the steam became so low that it required some minutes to get up sufficient to run the furrow through. This was laid by Mr. Fawkes to the fault of an inexperienced fireman, and to his wood being somewhat green, and not cut small enough.

Your Committee, however, throughout the trial, were of the impression that either the boiler itself was not arranged to make abundant supplies of steam, or the work it was put to was more than should be expected from a good boiler of this size. We feel satisfied that if cutters had been attached to all the plows, instead of only the one on the land-side furrow, the power consumed in drawing the gang of eight through a virgin prairie-sod would have been materially lessened. As it was, the sod was actually torn asunder as the plows were forced through it, but with suitable cutters, the furrow slice might have been turned with but little expenditure of power. From over anxiety and inexperience on the part of Mr. Fawkes, he did not really make so good a show of the powers of his machine as he might, and, in fact, the same may, with equal justice, be said of his competitor, for both of those persons came to trial unprepared for accidents, serious or trifling, as they might chance to be, and so little experienced in the working of their own inventions, that we overlook many details which contribute essentially to the success of public trials. It is only when weaknesses have been fully shown at such a time, that inventors begin to appreciate the qualities of their inventions; and your Committee are persuaded that if either the Fawkes or Waters machine was seen at regular work upon a farm, a better show would be made than the utmost painstaking brings to the observation of a Committee at a trial exhibition.

Our Committee divided itself so that a portion should conduct the trial of the Waters plough, and the remainder that of Fawkes.

Mr. Waters, while awaiting orders to move, got his steam up to 180 pounds in a brief time, a pressure unsafe, particularly in the hands of an inexperienced person. On starting to work, the guage showed a pressure of 140 pounds, under which, after suitably adjusting the depth of his two gangs of plows, by means of the screws prepared for that purpose, he moved forward a distance of 300 feet in two minutes; when, on turning his first curve, the caster wheel on the front of his second plow frame, by reason of a previous bending of its shaft, turned sidewise, and broke in pieces, letting two or three of the plows in the gang into the ground to great depth; one of them was snapped off, and further work rendered impracticable. From the commencement of the work until the unfortunate accident occurred, was but two minutes. The furrow turned by the thirteen plows was 19 feet in width, and the distance traveled being 300 feet, there was only plowed 5.800 square feet, or something more than an eighth of an acre of land—certainly not enough to give a fair idea of the possible performance of the machine. The accident would not have occurred if an experienced hand had been placed to manage each gang of plows, nor, perhaps, if the inventor had had the benefit of any reasonable experience with plowing machinery, and it is a source of much regret that the really good qualities of a powerful traction engine should not have been brought out, merely from careless management, on this important occasion. Waters's engine has undoubtedly great power, but has some objectionable features as well. There being four cylinders, the machinery is made more complicated, and by so much the less easy of management by farmers. The four cylinders are necessary to a machine like this which has two large travelling wheels, to keep each of which in motion at will a pair of cylinders must be used, for without them it would not be possible to get the wheels off centres under some circumstances. The revolutions of the engine being 24 to each one of the drivers, speed of locomotion is not obtained commensurate with the speed of the engine. The great length of the train of engine, tender and plows, make it unwieldy to handle, and prevents trimming up corners of lots and banks of sloughs and basins, where much waste of land would be caused. It is also asserted by that inventor that his field is not back furrowed and finished up, but a strip of fifty feet is left in the middle to be finished by horse power. The tractive power of the engine when at work seemed ample; but we are not prepared to say that such would be the case throughout a day's work, but suppose it would. The two pairs of cylinders being independent of each other, a serious obstruction to one driver might, and did, cause it to slip, while the other held its tractive power; thus there would be a tendency to throwing out of line. The internal gears of the drivers being quite exposed to dust and sand, the wear would be rapid. The raising and lowering of the gangs of plows by a quick screw, proved itself bad; for when the points ran down deep, the downward pulling weight caused the screw rapidly to run up, and the plows were buried almost to the beams.

Of course, further experiment with Mr. Water's machine being impossible, the entire attention of the Committee was given to the Fawkes' plow. The work done by this latter machine throughout was excellent, the furrows being evenly laid, and the turf completely buried, even in a stretch of land broken up into tussocks, with flags and other aquatic plants growing upon and around them. The soil was a black mold, so sandy in parts that a good clod of sod could not be picked up; in others, with much gravel intermixed with the mold; and in others a fine black vegetable mold, such as is common all over the "black prairie." Your Committee think that in building another engine, Mr. Fawkes will add extra flues to keep an extra supply of steam for emergencies, perhaps enlarge the diameter of his smoke stack, or make other proportional changes which will increase the efficiency of his engine, without at all affecting his principle.

The plows, as now set in gangs, are liable to choke, in some kinds of ground, from their being too nearly in a row laterally, whereas if set more obliquely on the frame, each furrow would be turned over before the one following would commence.

But, while your Committee are by no means prepared to certify that Mr. Fawkes's plowing machine has reached the degree of perfection only to be had after much practical working on a farm, they do not regard its several weak points, as above noticed, as invalidating its claims to public favor, for enough good work was done in the two miles of furrow it run on Friday, to prove it had great merit. It plowed for us at the rate of an acre in seventeen minutes, or three and a half acres per hour, including turns. At the Royal Agricultural Society of England's show this year, there were exhibited six steam plows and cultivators in actual work. Of these, the best was that of John Fowler, Jr., of London, whose engine is stationed at one side of a field, a self-moving drum at the other, and a wire cable, which winds and unwinds on the above drum, and another one beneath the engine itself, draws a double gang of plows—one half set to plow in one direction, the other in the contrary one. With this apparatus, taking 4 furrows, 9 inches by 6, and employing a power equal to 10 horses, 2 roods, 16 perches of ground only were broken up per hour.

To this machine was awarded the Royal Society's Grand Prize of £500 last year, at Chester, and the new prize of £50 this year, at Warwick; and your Committee are of opinion that if these awards were worthily made, the machine of Fawkes is worthy of commendation and support at their hands. They, therefore, take pleasure in reporting to the Honorable Executive Committee, that they unanimously award the Grand Gold Medal of Honor of the United States Agricultural Society, to Joseph W. Fawkes of Christiana, Lancaster county, Pennsylvania, for his steam plow.

All of which is respectfully submitted.

B. P. JOHNSON,
Secretary New York State Agricultural Society.
CHARLES DICKEY,
President Michigan State Agricultural Society.
S. J. HAYES,
Sup't of Machinery Illinois Central Railroad.
THOMAS COBB,
Master Mechanic Michigan Central Railroad.
A. J. GALLOWAY,
Land Agent, Chicago.
H. S. OLCOTT.
Agricultural Reporter New York *Tribune*

English Sporting.

The great "St. Leger Day," at Doncaster, brought bitter disappointment to a host of the sporting gentry. The betting had, up to the day of the race, been all upon Mr. W. Day's colt "Promised Land." Even at starting, the betting was 5 to 4 upon him, while 20 to 1 was bet against "Gamester," which came in the winner. Of the race the London *Times* says:—

Trains from London and the manufacturing districts arrived in rapid succession throughout the morning, and long before noon the streets were crowded. In the vicinity of the Subscription-room, people congregated in large masses, and it was evident, from the anxiety and curiosity which they evinced, that the monopoly which Promised Land had secured of the betting tended rather to deepen than diminish the interest with which the public generally regarded the race. The assemblage on the Town-moor was immense, and the Grand Stand seemed roofed by human heads. A clear atmosphere and a bright sun added to the picturesque effect of a scene which would have appeared gay and animated even on the dreariest November day. When the bell rang out for saddling for the first race, the spectators from the stand were enabled to realize a complete idea of the immense multitude on the course. The police had much difficulty in driving the crowds off the running ground, but the people behaved with great good humor, and seemed determined to let no ebullition of temper mar their enjoyment of Yorkshire's great sporting Saturnalia.

The races which preceded the great event of the day merely served to stimulate the curiosity of the spectators for the exciting spectacle which was to follow. The preliminary events, however, aroused the interest of the genuine racing men, and the shouting and crowding in the "ring" showed that speculation was being pursued with extraordinary industry. Eleven starters were announced for the St Leger, out of the 19 "colored" on the card, the most important absentee being Marionette, who was struck out at 10 o'clock this (Tuesday) morning. The ardor of Promised Land's partisans either cooled at the last, or the public had gained confidence in "the field," and had evidently little faith in "foregone conclusions." From 75 to 40, which were laid on the horse over night, he declined to 5 to 4. Summerside, the Oaks victrix, who was deemed his most dangerous opponent, had not a strong number of adherents among the public, but was supported steadily by her party. From our description of the race it will be seen that Promised Land made all his own running; certainly a bold proceeding, and one which indicated the great confidence which his owner placed in his chance. The excitement with which the race was regarded, first found vent when, after entering the straight, it was evident that Summerside was beaten, and a thousand voices proclaimed the fact. When, at the distance, Promised Land was seen in trouble, the sensation was immense, and was expressed by one prolonged shout, the purport of which was understood and echoed by people at too great a distance to witness the favorite's disgrace. The result of the race was unexpected even among Yorkshiremen, who ever adhere to the Whitewall stable. Indeed, the trainer of Gamester merely expressed his belief in the health and fitness of the horse, and of that there could be no doubt; but he was not sanguine enough to believe his horse capable of overthrowing Promised Land. The winner ran with a "stocking" on the off fore leg, and had a large white patch on his back to cover a place which he had rubbed while travelling by rail. He was the first to return to "weigh in," and both the horse and jockey were cheered with real Yorkshire enthusiasm, and when John Scott made his appearance the famous trainer came in for a tremendous ovation. Promised Land and his rider were, however, unjustifiably saluted with disapprobation. Gamester was, we believe bred by the veteran Sir Charles Monck, at his seat, Belsay Castle, near Newcastle, and is a remarkably handsome brown colt, standing about 15 1. To gentlemen sportsmen, the defeat of the favorite has been a marked discouragement.

The race is thus professionally reported:—

The St. Leger Stakes, of 25 sovs. each, for 3 year olds; colts, 8st. 7lb.; fillies, 8st. 2lb., the second to receive 100 sovs. out of the stakes. St. Leger Course. 167 subs.

Sir C. Monck's Gamester, by the Cossack, 8st. 7lb. (Aldcroft)	1
Mr. Saxon's Defender, 8st. 7lb, (L. Snowden)	2
Baron Rothschild's Magnum, 8st. 7lb. (J. Osborne)	3
Lord Londsborough's Summerside, 8st. 2lb. (Wells)	4
Mr. W. Day's The Promised Land, 8st. 7lb. (A. Day)	5
Mr. C. Peck's Napoleon, 8st. 7lb. (Fordham)	6
Colonel Towney's Gladiolus, 8st. 7lb. (Flatman)	7
Sir H. Des Vœux's Comforter, 8st. 7lb. (Ashmall)	8
Mr. T. Hunt's Aston, 8 st. 7lb. (C. Marlow)	9
Mr. J. Ferguson's Lovett, 8st. 7lb. (French)	10
Mr. J. Scott's Uralian, 8st. 7lb. (W. Boyce)	11

Betting at Starting—5 to 4 on The Promised Land, 4 to 1 agst Summerside; 12 to 1 agst Defender; 15 to 1 agst Gladiolus; 15 to 1 agst Napoleon; 20 to 1 agst Gamester;

The horses were drawn up at the post soon after the appointed time, and they were dispatched on the first attempt. Defender and Gamester were quickly on their legs, but they had scarcely got into their stride when Promised Land rushed to the front and took a lead of three or four lengths, Gladiolus, Gamester, and Aston being his immediate attendants. Midway up the hill, Aston ran into the second place, Summerside going on third, and Gladiolus fourth; Uralian dropped hopelessly into the rear, and was never afterwards seen in the race. On went Promised Land with a clear lead, Aston and Summerside being second and third, Comforter, Gladiolus, Defender and Gamester next. At the Red House, the lot began to take a little closer order, Aston giving way to Summerside, and with Comforter joining the beaten ones. Gladiolus held the the third place until after crossing the road, when he gave way, and Defender, next the rails, took his place. Gamester on the upper ground now showing very formidably in their wake. Midway between the road and the distance Summerside was beaten, and at the distance Alfred Day "rode" Promised Land, and a tremendous shout was raised of "The favorite's beaten," and such was the fact, for Gamester came out, followed by Defender, but the race was now virtually over, and Gamester ran home an easy winner by half a length; Magnum, who caught Summerside at the stand, was beaten two lengths from the second, and finished a head in advance of the mare. About a length from them came Promised Land fifth, and a similar distance separated Napoleon from him. The others came in at such wide intervals that the judge was enabled to place the lot.

Isambert K. Brunel, Engineer of the Great Eastern.

By the Circassian, arrived at St. Johns, we are informed of the death, from paralysis, on the 16th inst., of Mr. Isambert Kingdom Brunel, the illustrious engineer. He was immediately of French descent, his father, Mark Isambert Brunel, who was also renowned in the same science, being a native of Rouen. Isambert, the son, was born at Portsmouth, England, in 1806, where the elder Brunel was employed in constructing the docks of that famous seaport and arsenal. While very young, he was sent to France and educated at the College of Caen, in Normandy. On his return to England, in 1826, he was engaged to assist his father in the construction of the Thames Tunnel, of which he was resident engineer. During the progress of this stupendous work he was, on several occasions, exposed to imminent danger from the irruption of the water, especially in 1828, when, being surprised by the current about six hundred feet from the mouth of the tunnel, he was seized by the water and thrown upon the beach, sustaining, however, but little injury. Some years before the completion of the tunnel, namely, in 1833, he was appointed to construct the Great Western Railroad, upon which he employed all the resources of science, and displayed a skill as an engineer which was never before and has never since been equalled. The famous Box Tunnel, on this road, was entirely his work. The longest suspension bridge in England, that of Hungerford, over the Thames, was designed and built by him. He assisted Mr. Stephenson in floating and raising the Conway and Britannia tubular bridges, one of the most difficult enterprises on record. He was also engaged in the construction of the Tuscan end of the Sardinian Railway, and during the late war with Russia was employed to construct and organize the hospital of Renkioi, situated on the Dardanelles, and intended to afford accommodation to no less than three thousand sick and wounded at one time. These are only a portion of the land work to which he has devoted himself. Most of the large docks at all the principal seaports of Great Britian were either wholly constructed or completed by him. Nor was his genius confined to railroads, bridges, and tunnels. He was also the constructor of the Great Western, the first colossal steamship which traversed the Atlantic, and whose arrival in the waters of our Bay will be remembered by most of our readers. That famous ship was then considered a monster of the deep, being 236 feet in length by 35 feet 6 inches in breadth. Since her time the Great Britain, the Persia, and all of the Collins line, have exceeded her in length, especially the Persia, which is 390 feet long. The Great Eastern is nearly three times her length, and to this last crowning work of ocean navigation, Mr. Brunel's fame is also intimately attached. It was originally supposed on this side of the Atlantic, that he was her builder, but such is not the case. Mr. Scott Russell designed her lines and constructed the iron hull of the ship, and considers himself responsible for her merits or defects, as a piece of naval architecture. He is also responsible for the paddle-wheel engines of 1,000 horse power, by which she is propelled. But Mr. Russell acknowledges that it is to Mr. Brunel, as the Company's engineer, that the original conception is due of building the mammoth ship. The idea of using two sets of engines and two propellers, was also his. It was his idea, also, to introduce a cellular feature, like that at the top and bottom of the Britannia Bridge, into her construction. These are the main characteristics which distinguish the Great Eastern from other ships, and these are Mr. Brunel's. The launching of the ship, her rigging and masting, her cabins and her outfit, were under Mr. Brunel's superintendence. Besides the regret which will be felt at his death, involving as it does such a loss to engineering science, it must naturally be a source of grief not only to his friends, and fellow artists in the construction of the monster vessel, but to the public at large, in England and in this country, who share so much interest in her success, that he was not spared to witness it, and to be a living partaker in her renown. He was not able to be on board of her at the exciting time of her liberation from the Thames, and her triumphal progress till she emerged into the Channel. Possibly he heard of the disastrous explosion on board, a short period before his decease, but the dispatch which informs us of his death contains no particulars.

Mr. Brunel was elected in 1830 a member of the Royal Society. He was also an associate of the institution of Civil Engineers, of the Society of Arts, and a member of the Astronomical, Geological and Geographical Societies of England. He received from Louis Philippe, some years since, the cross of the Legion of Honor.—*Times, 28th.*

Cause of the Occupation of San Juan.

From the San Francisco *Bulletin* of the 5th, we learn what it states is the true origin of the present difficulty with England on our Pacific coast. As the *Bulletin* is uniformly well posted, enterprising and reliable in the matter of news, this information, amusing as it is, may be deemed every way correct. It says:—

We have obtained, from a reliable source, an interesting statement of the facts to which Gen. Harney briefly alludes. It seems that Mr. Griffin, Hudson's Bay Company's employee, and Justice of the Peace at San Juan, had a lot of Sandwich Island hogs—animals noted for their predatory habits and a peculiar facility for getting through almost any kind of hedge or fence. Some of these quadrupeds had trespassed upon the farm of Mr. Cutler, an American settler, and rooted up his potatoes. He notified their owner of the fact, and announced his intention of shooting any of them that might repeat the offence. Mr. Griffin paid no heed to the warning, and the consequence was that Mr. Cutler shot a boar. He immediately informed Mr. Griffin what he had done, and offered to pay a fair price for the animal; but Griffin refused, saying the matter would be otherwise settled.

The next step was the arrival of two members of the Executive Council of Vancouver on the island, (Messrs. Fraser and Dallas,) who called on Mr. Cutler, and informed him that he had committed a heinous offence, for which he was liable to transportation; but after some talk offered to compromise the matter for $100. This, Cutler declined. Subsequently a man-of-war was sent to the island, with orders to arrest Cutler, and bring him to Victoria for trial; but he evaded seizure by keeping out of the way. He then drew up a petition to General Harney, which, being signed by other residents on the island, caused the occupation.

The Hudson Tar and Feather Case

Mower vs. Bogardus and others.—The jury in this case at last disagreed, and were discharged. It was understood that three of the jurors were in favor of an entire acquittal of all the defendants, and that the other eight (there were but 11 on the jury, as one was excused on account of sickness,) were for a verdict against some of the defendants—seven, for $10.-000; and one, for $15,000.

Further Foreign Details.

THE CHINESE QUESTION.

An *attache* of Mr. Ward, our new Minister to China, who had arrived there just previous to the late combat between the English and Chinese, writes to the *Journal of Commerce* the particulars of the course taken by the American Minister in regard to the treaty. He says:—

U. S. Flag Ship Powhatan,
Gulf of Pechele, China, July 3, 1859.

My last letter, dated from Shanghai, was indited in the most exultant expectations. Our new Minister, Mr. Ward, had been most kindly and honorably received by the two Imperial Commissioners; no vexed or vexatious questions needed adjustment, or lay in the horizon of probability. Every kind wish was expressed by the Commissioners, and every assurance given of the most friendly intentions and faithful conduct. No opposition was made to Mr. Ward's going to Pekin, and he carried with him a document from them authorizing it, and directing the local authorities at Tien-tsin to make all needed preparations for his reception and also for his conveyance. The skies were serene and the air bland; and the road being fairly opened, and all the auspices most favorable, I hoped and indeed fully expected to date my present missive from the mysterious capital of the "Son of Heaven." It is quite a different thing to date it on board ship, anchored off the mouth of the Peiho, in the Gulf of Pechele, though Pekin is only 120 miles distant. But it is no nearer than it was just a year ago, when we lay for a month in these same waters, and witnessed almost the same scenes.

Upon returning to Hong Kong from Penang and the Straits of Malacca, Mr. Ward chartered a small steamer called the Toey-wan, which, as I understand, is the name given by the Chinese to the island of Formosa, whose light draft adapted her to the navigation of the Peiho, or any other river which it might be necessary for him to travel in fulfilling his mission in China. Reaching Shanghai May 25th, he at once informed the Imperial Commissioners whom he found there, and who had been there from the beginning of the year, in order to meet the foreign ministers who were expected, of his arrival and desire at once to unite with them in exchanging the ratifications of the treaty negotiated by Mr. Reed and themselves. Besides this, he had brought an *autograph letter* from the President of the United States to the Emperor of China, which he was required by the President to carry to Pekin in person and present there. The Commissioners, in reply, were quite courteous and respectful, expressing kind feelings toward the United States, and a readiness to exchange ratifications; nor did they express any opposition to Mr. Ward's avowed intention of going to Pekin. But they said that at Lord Elgin's request when he went to Canton, they had remained here all the while in expectation of his return in six weeks, but had learnt he had gone to England, and a new minister had been appointed in his place who was then on his way, and was soon expected in Shanghai, by whom and themselves important questions were to be discussed and settled before proceeding to Pekin. If they were to set out for Pekin at once, travelling, as they must, in chairs borne on the shoulders of men, they could not reach there under sixty days; and if Mr. Ward should now proceed to Tien-tsin, a large town on the Peiho river, and on the route to Pekin, he would be obliged to wait there till they themselves had gone to Pekin and come down from there to Tien tsin, where the summer heat would be oppressive, and sickness at that season often prevailed, besides other annoyances which must be experienced by Mr. Ward. They advised him, therefore, to remain in Shanghai a while, and in the meantime invited him to an interview, when a plan for the journey could be devised, more agreeable and safe.

Mr. Ward was not satisfied with the reasons they assigned for delay, and told them he wished to exchange the ratification on or before the 18th of June, the period to which they were limited, and which was near at hand. Mr. Ward also wished to escape all complications, and the charge of subserviency and crouching to other foreign ministers sent on the same mission to China, and soon to appear there. Wishing to stand independent and free, he desired to reach Pekin, and exchange ratifications before any chance for entanglements could arise. Besides, to avoid the objection of the long time required for a land route journey to Pekin, Mr. Ward suggested that the Imperial Commissioners could take one of the Chinese steamers lying in the harbor, and in 8 or 10 days at most be in Pekin. But the Commissioners objected, because *travelling by land* was according to the universal usage for the country for men of their position, while travelling by sea was contrary to the Emperor's express commands. They said the French and English ministers would soon be here, with whom Mr. Ward could unite, and all proceed in one party. They also assured him that if the ratifications were not exchanged within the time specified, it should make no difference; for they should be conceded to have the same validity. They also said that as the right of the American minister to go to Pekin was secured through the English treaty, by "the most favored nation" clause inserted in our own, it was proper for the English minister to go first. The Commissioners said that if Mr. Ward insisted upon going to Pekin, he must conform to the provisions of the U. S treaty, which allowed him to "go *where important business* made it necessary," as the treaty specified, of which the *Emperor*, and not the *minister*, must be the judge. The intention of the minister must first be communicated to the Emperor, and his consent obtained; and, obviously, between the caprice, the pride, and the self interest of the Emperor, and the delays necessary or invented, there could be no prospect that Mr. Ward, or any other American minister, would ever see the inside or outside of the capital of the "Sun of Heaven." When Mr. Ward asked them if he must wait till the ratification of the English treaty, they said the exchange of ratifications of his treaty must be in Shanghai, should it be done before. Mr. Ward replied that he was directed by the President of the United States to do it in *Pekin*, at the same time delivering his autograph letter to the Emperor. He also asked them, if the ratifications should be exchanged in Shanghai whether he should then have the right to go to Pekin with the other ministers; to which they replied, that he could, *if he had important business.* Mr. Ward retorted, that he would not have the nature and importance of his business inquired into and decided by any one, and he would go to Pekin with the first minister of any nation who went, and with as much courtesy and honor, or he would refuse to exchange ratifications, and return home. They replied that all the treaties were deposited in the archives at Pekin, and the ratification of some of them could be made within the specified time, and all must be together.

At length Mr. Ward assented to their request that he would remain in Shanghai for a time, and go up in company with the French and English ministers, making the following stipulations, however, which were embodied in a document signed by the Commissioners; 1. They must acknowledge that he was here within the specified time, and ready to exchange ratifications; and therefore no blame could rest on him. 2. That he should go to Pekin with the first minister of any nation who went. 3. That the treaty was confessedly valid. A few days later Messrs. Bruce and Bourboulon, the English and French ministers, arriving at Shanghai. Mr. Bruce refused, as it is reported currently, to remain any time in the place to dispose of the questions left unsettled by Lord Elgin, and which he promised to return from Canton and settle. He would submit to no delay, but hurry on to Pekin, and deliver the Queen's letter to the Emperor, despite all difficulties and obstructions. He did not even call upon the Imperial Commissioners, nor did he ask for an interview, nor consent to one when it was asked by the Commissioners. He wished them to hurry away, saying that Admiral Hope had already started for Tien-tsin, charged to inform the local authorities that he himself would soon be there, and requesting preparations for his reception. The Commissioners replied that, as he *would* go, they had written to the Emperor to request him to appoint some one to repair to Tien-tsin to receive him. The couriers, who relieve one another every mile, as I am told, travel 600 li, or 200 miles, in twenty-four hours, and would reach Pekin in eight or nine days at the furthest. It might be presumed that when the ministers arrived at Pekin the officials appointed by the Emperor would be there also. They, themselves, in view of all the circumstances, had concluded also to leave immediately. They had before requested Mr. Bruce to anchor his ships-of-war outside of the bar of the river, and take with him in his retinue and baggage only what would be within reasonable limits. In this way all the ministers would arrive at Pekin, as the Commissioners were confident, in time for the due exchange of the ratifications.

Things being thus arranged, on the 13th of June the Imperial Commissioners started for Pekin by the overland route, carried in chairs, and the French and English fleets sailed about the same time, while we left two or three days later.

Here follows an account of the movements of the British fleet, resulting in the combat on the Peiho river, the details of which by the correspondent are the same as those previously published at greater length. It has already been stated that the Chinese objected to the removal of the river obstructions, on the ground that they were placed there as a protection against pirates, which swarm in these waters. To this, the correspondent adds another reason:

They (the Chinese) also stated that this was not the Peiho, but that the mouth of that river was 10 or 12 miles to the North, and that the ministers must go by that route to Pekin. This river had not been heard of by any one on board the men-of-war anchored here, French, English and American, and its existence was doubted, it being thought that the Chinese were only playing a *ruse* to deceive, perplex and get rid of disagreeable visitors. But after the engagement a Chinese chart was obtained, and the river was found to be laid down upon it. Our minister, to ascertain its real existence and character, on Wednesday, June 29th, sent the Toey-wan with his brother and Rev. Martin, one of the interpreters, in search of it, together with a letter to the governor of the place, couched in respectful and courteous terms, and requesting an interview or correspondence, informing him of his character and the document of the Imperial Commissioners authorizing his proceeding to Pekin. The river was found, as stated, and laid down on the Chinese chart. There was a considerable town and innumerable villages, with a strong fort near the mouth of the river, with crowds drawn on the shore, of poor, kind and ignorant people, among whom it was difficult to find one able to read or write. At length one was found, who promised to carry the letter to the Governor, who was then absent from the place. A large body of Tartar horsemen was seen at some distance, estimated at 5,000, who have a deadly hostility to all foreigners, and receive a reward upon carrying a head upon a spear to Pekin. The kind-hearted peasants saw the horsemen rushing down to the beach, and warned our friends of their danger, who, therefore, took to their heels, having nearly half a mile to run before reaching the water. Then they dashed into the water, the horsemen stopping on the beach, except two, who drove into the water, following our friends as far as they could, who fortunately succeeded in reaching the Toey-wan and returning to our ship.

It was exceedingly doubtful what reception Mr. Ward's letter would meet with, but very judiciously we resolved to try to find both the mouth of the never-heard-of river, and the equally unheard of Governor. Three days after, however, two good-looking junks were seen approaching our ship in the morning, which, when they got near, seemed to hesitate, since the hour had not arrived for running up the flag. The Commodore, observing this, ordered the flag to be run up at once, when the junks came to our bow, and an officer came on board with the following letter:

To his Excellency the American Minister.—June 30, 1859.

"Seet Sun, Intendant of the Circuit of the Department of Tien-Tsin and Hoken, in the Province of Chili, herewith sends a communication. On the 29th instant, a dispatch was received from the American Minister, by the way of the Northern passage of the river, addressed to the Governor General, from which it is understood that the ship bearing his Excellency has entered the Pei-ho (or *Tien-Tsin river*, as it is called in this letter.) The commands of his Imperial Majesty have already been received, directing the Governor General and Treasurer of the Province to receive the Minister at the Northern entrance, and conduct him to Pekin, there to exchange the ratifications of the treaty. I now send a small present, which I respectfully request him to accept on board his ship."

The "small present" embraced the following articles: 20 sheep, 20 hogs, 300 chickens and ducks, 30 large bags of rice, and 30 of flour, 4 baskets of apricots, and 4 of peaches, with a heap of garden vegetables. A large part of the articles were sent to the English ships for the benefit of the wounded, and were most thankfully received. We are now waiting for another communication from the Chinese Intendant, and cherish the hope that our Minister may yet enter the Imperial City, and some others with him.

On the morning of the battle, a junk came to the English Minister's ship, having on board three Mandarins from the town at the mouth of the "northern passage," who requested him to go there and await the arrival of the Imperial Commissioner Kweiliang, who, as they were informed from Pekin, would be sent there to receive him and conduct him to Pekin. It would seem from what yet appears, that the Chinese authorities are willing the English minister should proceed to Pekin, but not with an armed force. Besides, the Peiho was not opened by treaty, and Mr. Bruce had no right, therefore, to insist upon that passage, exclusively, which the Chinese have so strongly fortified and obstructed, from the fear that foreign forces may ascend the river and attack the capital.

What will come out of these strange and unfortunate events, remains to be seen. It would not be strange if the English returned in strong force, and pressed on at all hazards and any loss, till the next treaty shall be concluded in the Imperial city. But it must be deferred till another year, the present season is so far advanced. In the meantime, the French and English fleets are retiring, and in a few days a foreign sail will not be seen on these waters.

COMMERCIAL VIEW OF THE CHINESE AFFAIR.

The London *Times* of the 15th, in its commercial article says:—

The mercantile letters from China generally concur in the view, that the renewal of hostilities will not be attended by any material interruption of trade. At Shanghai, it is said, the natives are greatly annoyed at what has happened, the majority of them being peaceful well-wishers to the progress of commerce.—There is, consequently, thought to be no danger of the good relations with them being disturbed. A conviction is expressed, however, that the English Government will have to send out a very large naval and military force. A blockade of the various ports would soon, it is believed, bring the Emperor to submission; but this, by depriving Great Britain of a heavy portion of its customs revenue, would be equally disagreeable for both parties.

The question, however, is suggested whether the English should go on paying duties to the Chinese, which at Shanghai alone amount to £500,000 per annum; but in that case the contingency has to be considered that the Chinese might retaliate by ordering an entire suspension of business with foreigners at the various ports, although such a measure would be fatal to themselves, since it would practically have the same effect as a blockade. The American merchants regarded the question with considerable interest, since the United States authorities had decided that they must adhere literally to their own treaty stipulations without regard to the course of other Powers, so that they might be compelled to pay while the English escaped; but the difficulty, supposing it to arise, would doubtless be met by easy expedients. It was generally considered that the news of our defeat would pass expeditiously through Russia, and in one letter it is remarked, "No doubt you will receive intelligence from St. Petersburgh long before you get this." If the event was known early at that capital it has been a secret well kept.

FURTHER DETAILS OF THE GREAT EASTERN DISASTER.

The casing around the funnel which blew up, formed a kind of vertical boiler, where the water intended to be used in the main boilers was placed around the funnel, so as to secure its heat and transmit hot water to the main boilers, instead of cold. In the top of this an opening was left for the escape of any steam which might arise, and permanently, it was never expected to be closed. But, previously to the departure of the vessel from Deptford, it became desirable to test this separate vertical boiler by hydraulic process, to do which, the permanent opening was closed and a temporary faucet fitted, and this was by some shocking inadvertance never taken away, and what is worse, it was never turned off. As has been the case before with this method of trying to heat water for the main boiler use, (for which reason the same apparatus had been abandoned, after trial by the Collin's steamers,) when the vessel had got under way the vertical boiler did not supply water enough for the main boilers, and communication with it was once shut off. This, under the supposition that an opening at the top left a place for the escape of steam, was sufficiently natural, but when the communication was interrupted the water left in the funnel was rapidly communicated into steam, and the whole apparatus became a monstrous vertical boiler without a safety valve or any vent whatever. That all the water left in the casing was converted into vapor long before the explosion took place is quite certain, and it was evidently not till the confined steam had gone on expanding and probably decomposing for some hours that the casing at last gave way with awful effect.

The engineers who have inspected the rent masses of iron, and the tremendous evidence which yet remain of the force of the explosion, come to different conclusions as to the amount of steam pressure which occasioned it. Some literally give it as high as 1.000 pounds to the square inch, but this appears almost incredible. The majority generally estimate it as having been between 400 pounds and 500 pounds, an amount of pressure which, as far as can be calculated, has never yet been got by steam. The highest pressure boiler, for locomotives, are only made to withstand about 150 pounds to the inch. Even for experimental purposes, a pressure of 500 pounds, or 600 pounds steam has never yet been generated. James Watt, in his earliest experiments on evaporation, made some very small globular boilers, on which it was said a pressure of 400 lbs. was eventually got, but anything approaching to 500 lbs. or 600 lbs. has never been so much as heard of among engineers till the present most unfortunate occurrence. Gunpowder when exploded expands 800 times its bulk, and when steam is superheated to an intense degree, the water becomes utterly decomposed into its constituent gases, oxygen and hydrogen, which, where brought into contact with any red hot surface, recombine with the most fearful explosion. This was exactly what took place on board the Great Eastern, and the blow up in its force was precisely similar to what would have taken place had the space between the inner and outer casing of the funnel been filled with gunpowder instead of steam.

The stokers and firemen were the only sufferers by the explosion, and the number of killed and injured among them was fearfully severe. One poor fellow was at the ash-hole, (which is an opening at the side of the ship, immediately forward of the paddle-wheel) emptying ashes into the sea, when the explosion took place. Through fright, or because he was burned or scalded, he suddenly jumped out of the hole, and caught with his hands upon one of the slanting braces extending from the outer edge of the wheel guard to the side of the vessel. Here he hung for a few moments by his hands, and then, from want of relief in the confusion of the occurrence, or from injuries to his hands, he dropped into the water, where he was seen swimming for a few seconds in advance of the paddle wheel. But it soon overtook him, and the poor fellow was seen no more, although life buoys and other appliances were thrown overboard from the stern as the spot was passed where his body would have been likely to have been, and the boats were afterwards lowered to effect his rescue. The deep immersion, and the ponderous blows of the giant paddlewheel, left him little chance for life. Another account, however, says that he was blown or fell through the ash hole directly into the water, some little distance in advance of the paddle from which he vainly tried to escape by swimming.—Two companions who were with him were saved by the merest hair-breadth escape, one of the men clinging to the other, and both falling in the gangway, a short distance from the ship's side.

After the explosion the great struggle was to get out the miserable firemen who it was known was scalding below, and whose terrible groans reached the deck. As soon as the smoke and steam had been sufficiently dampened to render a descent, not safe, but possible, (for one of the first great apprehensions was that of a subsequent fire, to subdue which the hose apparatus had been got out, and an immense body of water poured into the hold,) several men at once volunteered to go down the shafts. In a very few moments all the twelve firemen on duty were brought up. The worst injured seemed in the least pain, and actually walked off to the hospital. But the sight of them was heart-rending. The scalp of one was hanging in strips from his head; the boiled flesh of another slipped from the bones of his hand while removing his coat, and the skin of others peeled off with their clothing. They were generally delirious, and all seemed to be cold, and begged to be covered up. Apparently, their actual suffering was not extreme. But they had breathed the fatal steam, and before 10 o'clock in the morning, death, it almost seemed mercifully, had come to the relief of three of them, while at least five others were becoming quiet and unconscious in his near approach.

Two or three of these poor fellows walked up to the deck almost, if not quite, unassisted, and this may have led to the belief that their injuries were slight. Their aspect, however, told its own tale, and none who had ever seen blown up men before could fail to know, at a glance, that some had only two or three hours to live. A man blown up by gunpowder is a mere figure of raw flesh, which seldom moves after the explosion. Not so with men blown up by steam, who for a few minutes are able to walk about apparently almost unhurt, though in fact mortally injured beyond all hope of recovery. One or two, as they emerged from below, walked aft with that indescribable expression in their faces only resembling intense astonishment, and a certain faltering of the gait and movements like one that walks in his sleep. Where, not grimmed by the smoke or ashes, the peculiar bright, soft whiteness of the face, hands, or breast, told at once that the skin, though unbroken, had, in fact, been boiled by the steam.

One man walked along with this movement and look, and seemed quite unconcious that the flesh of his thighs (most probably by the ashes from the furnace) was burnt in deep holes. To some one who came to his assistance he said quietly, "I am all right. There are others worse than me. Go and look after them." This poor man was the first to die.

A fresh panic, and a legitimate source of alarm, within ten minutes after the explosion, was the state of the other heater, which was, by the uninitiated, momentarily expected to blow up. Blue steam was hissing from its safety-valve, and the heat was intense. But the slacking off of the fires removed the danger.

The grand catastrophe was scarcely over when another stared the unfortunate steamer's company in the face. As the helm was severely strained to get out of the way of a ship which seemed bound for a collision, and as our vessel's prow was turned square towards Beechy Head, not five miles from it, one of the little ropes snapped, and control was lost. Capt. Harrison had objected to ropes, and had provided chains, which in the course of half an hour were rigged, the ship being steered in the meantime by a supplementary tackle, provided for such accidents.

The usual variety of incidents occurred, showing the respective traits of character which such disasters call out. The pilot, Mr. Atkinson, was, of course, on the bridge, abaft the scene of the explosion, and under the shower of glass and splinters. Pulling his hat over his head to shield himself, he stood fast in his place, remarking, "that's none of my business; I'm going to steer the ship as long as she is a ship." Another hard-headed old fellow was laying a floor on a part of the wheel-house. He was sawing off a plank at the time of the disaster, and, without taking his knee off the timber, he looked up till the shower of projectiles had fallen, and then quietly resumed his sawing as if nothing had happened. One of the newspaper reporters betook himself to the extreme stern of the ship, confidently expecting that the other nine boilers must necessarily go off in their turn, like a train of mines. One person, approaching an officer, exclaimed, "Tell me the worst, I am prepared to meet my God." Very few were loud and profane, as I have sometimes seen people in the very jaws of death.

Several experiments were made by passengers on board to ascertain the speed, by heaving blocks of wood and noting the time in seconds when they reached the stern. A mean of a number of these was struck, and showed a result of one knot 14.7, about equal to ten and a half knots an hour. At this time the paddles were making six revolutions and the screw thirty, the former being capable of fourteen, and the latter of forty-eight. A subsequent statement from an official source was, that during a portion of her voyage the ship steamed at the rate of nineteen miles an hour. Her draught being very light, her screw was half out of water, and consequently had only half the motive power which it will eventually possess.

At ten o'clock the following morning, the steamer cast anchor in Portland Harbor. A more glorious day could not be imagined, and fleets of yachts and steamers came out to meet it, with salutes, and music, and cheering, little knowing that the great ship carried dead and dying. They soon seemed to discover that something was wrong—that a chimney was missing—and for an hour after the anchor was cast, they sailed round and round the vessel in silence. At last a boat came to remove the passengers, and then the sad truth was for the first time told; and it was at once flashed to the remotest parts of the kingdom.

THE TRIP TO AMERICA.

Captain Comstock, who returned in the Vanderbilt, and who was on board at the time of the explosion, says that according to present appearances the Great Eastern will now leave Holyhead for Portland, America, on the 20th October, and that it has been fully determined by the Board of Direction that, from Portland, U. S., *the Great Eastern shall come on an excursion trip to New York, by the way of Sandy Hook.* Before the ship left the Thames, Capt. C. and Capt. Harrison were questioned on the subject before the Board of Direction, and both concurred in the opinion that the ship can enter the harbor over the bar at Sandy Hook, drawing twenty-four and a half feet of water, with perfect safety. The famous clipper ship Great Republic crossed the bar safely, drawing some inches over twenty-five feet. It was then arranged that at Portland, U. S., the Great Eastern shall be lightened to the required draft, and then proceed on her excursion to this city via Sandy Hook. She will probably anchor somewhere in the neighborhood of the Battery.

THE GREAT RUSSIAN TELEGRAPH.

St. Petersburg, Sept. 3.—Unless the Transatlantic Telegraph Company make haste to improve upon their former efforts, the Russian Government will certainly anticipate the successful completion of the great undertaking they have but commenced. In the last number of the *Irkutsk Gazette*, which has arrived here, (says the Petersburg correspondent of the London *Telegraph*) I find an order of General Mouravieff-Amurski, the Governor of East Siberia, wherein he commands one Captain Romanoff to survey the country, from Irkutsk to the shores of the Pacific, with a view to the construction of an electric telegraph. The wire is to be laid by way of Kiachta, the well known commercial town on the Chinese frontier; and all authorities are requested to assist the Captain wherever and whenever he requires them to do so. As no date is affixed to the order, the probability is that the survey was nearly executed before its publication. From the shores of the Pacific the wire is to be carried on to the continent of America, either through the Aleutic Isles or by way of Behring Straits. In neither case do any natural difficulties obstruct the realization of the scheme, and there is no wide extent of ocean to be traversed. The Berlin firm, Siemens & Halske, the same who laid down the Red Sea cable, and constructed the whole network of Russian telegraphs, will be entrusted with the execution of this grand enterprise. Within a year or two London may expect to communicate with New York *via* St. Petersburg and the North Pole, or thereabouts.

Present U. S. Force in the Pacific.

Our present naval force in the Pacific is as follows:

	Tonnage.	Officers & men.	Guns.
Flag ship, steam frig'te Merrimack	3.200	600	40
Flag ship, steam frigate Lancaster	2.260	500	18
Steam frigate Saranac	1.446	300	6
Steam gun-boat Wyoming	997	100	5
Sailing sloop-of-war Cyane	762	230	20
Sailing sloop-of-war Vandalia	782	240	20
Sailing sloop-of-war St. Marys	928	250	22
Sailing sloop-of-war Levant	792	250	20
Total	11.328	2.350	151

The Lancaster is now outward bound to relieve the Merrimack. The British have 12 vessels, and 3,000 men in the Pacific.

The Monster Oyster Bed.

The whole line of shore from Rocky Neck to New Haven has been roused to the most intense excitement over the accidental discovery of a monster bed of more than monster oysters. The bed lies a little over the centre of the Sound in a line bearing from the Norwalk to Eaton's Neck light—and from a party who has dredged over it, we learn that the bed is certainly from *one mile wide to about two miles long.* Other stories say *three miles wide and ten long!* But, we have taken much pains to get at the truth of the matter, and think the first statement entirely reliable. The discovery was made week before last by a party of five Darien fishermen, whose names are William Wood, James Warring, Thomas Garlin, William Hoyt and Alexander Stevens. These men were out fishing, and chanced to drop a *dredge* for an anchor over the bed, when on taking it up it was filled with enormous bivalves, which led to further investigation, and the result stated. One vessel, last week, took up *seven hundred* bushels in a single day! The bed seems to be almost inexhaustible, and must contain many *millions of bushels.* We were shown samples of the oysters yesterday as large as an ordinary garden spade, the meats from which looked more like beef tongues than the ordinary bivalve! There were on Sunday two *steamboats* and about 150 sail vessels on the ground dredging nearly all day—(mostly New York people, we are glad to hear). This, Monday, everything in the shape of a boat and an oyster-dredge has been brought into requisition, and our blacksmiths are diligently at work making more implements to take them with. There is no means of even approximating at a valuation of this discovery. Probably *five millions of dollars* would fall far below the reality. Nothing has ever equaled the excitement hereabouts among the fishermen and marine speculators, since the great Ring End oyster war some thirty years ago, when the long toms, &c., were brought and charged to the muzzle to fire upon the New Haven marauders. This bed is, in winter, from 6 to 8 fathoms, and there is no telling what the effect is to be upon the oyster market or palates of epicures.—*Norwalk, Ct., Gazette, 27th*

FURTHER FROM THE OYSTER BED.

The oysters, though very large, are not now in good condition, and it is found necessary to "lay them down" again for a short time before sending them to market. The lucky discoverer of this unwrought mine of aquatic wealth, received from some oystermen of City Island, the handsome sum of $500 for the disclosure of his secret! The first day's dredging is said to have much more than paid for the information.

On Saturday last there were upwards of sixty vessels and boats, besides one steamboat manned by at least 250 men, busily engaged dredging for hidden wealth.

The oysters lie in deep water—deep enough to float the Great Eastern—and so thick that the dredges can with difficulty make an impression upon them!

Of course great excitement exists among that class of our population who follow the water, for many miles along the shore, and boats and men are in very great demand.

As the oysters lie within the jurisdiction of the State of New York, our neighbors from the Connecticut shore have no right to take them; some of them, however, have not thought fit to absent themselves from the oyster bed on that account. Efforts are, I am told, being made, by those "to the manor born," to exclude all who have no legal rights there. The apparent selfishness of this course is excused on the plea that the laws of Connecticut have been strictly enforced against them—no one from this shore being allowed to take oysters within the waters over which Connecticut claims jurisdiction.

We learn from the Manchester, N. H., *American*, that a man named Robert Rankin arrived in that city last Monday afternoon, and in the course of the evening, while wandering around the city, came to Merrimack Square, and was seized with a desire to climb to the summit of the flag-staff, which, if we remember aright, is 206 feet in height. It was quite dark, but he started on his perilous ascent; passed the first splice, and gained the dizzy altitude of 136 feet, when he lost his hold and fell. He struck first on the deck at the lower splice; glanced thence to one of the iron guys which stay the lower mast, and then fell to the ground—not dead, as would, as a matter of course, be supposed, but without a bone broken, or any serious injury.

Opening of the Cooper Institute.—Although the public have had access to the Cooper Institute for some time past, yet the regular commencement of the operations of the union are but now fairly systematized and announced. The School of Design; Reading Room; Night Instruction; Lecture and other departments, are all complete and ready for progress. The dedication takes place next spring. The following is the announcement by the Union:—

COOPER UNION FOR THE ADVANCEMENT OF SCIENCE AND ART.

The Trustees announce that since the execution and delivery of the deed by Peter Cooper, Esq., conveying to them in fee simple, without reservation of any kind, the property at the junction of the Third and Fourth avenues, commonly known as the Cooper Institute, with all its rents, issues and profits, they have been diligently engaged in organizing the Institution upon the several trusts contained in the deed.

1.—THE SCHOOL OF DESIGN FOR FEMALES

Will open for the reception of pupils on the 26th Sept. inst., under the direction of T. Addison Richards, M. A., assisted by Mr. Robert O'Brian in the department of engraving off wood and copper. The design of this school is to prepare females to become teachers of drawing and painting, and to enable them to earn a livelihood by engraving. Pupils will be received into the industrial classes without charge, on complying with the rules of the school, which can be obtained at the office of the Union.

2.—READING ROOM.

The great Hall on the third floor has been arranged as a reading room, and will be supplied with all the leading foreign and domestic newspapers and magazines. It will be open after the 1st of November, from 9 A. M. until 10 P. M.. free to all persons, male and female, of good moral character, who comply with the regulations. This department is designed especially for the use and instruction of the working classes; but none will be excluded so long as its capacity is not exhausted.

Attached to the reading room is a gallery of art, in which are deposited the Bryan Collection and other works of art, which will be open day and night, without charge, to the public.

3.—DEPARTMENT OF NIGHT INSTRUCTION.

Regular classes will be formed for instruction in architectural, free-hand, and mechanical Drawing (including the designing of furniture), Chemistry, Mechanical Philosophy, Mathematics, and Music. These classes are designed especially for the improvement of mechanics and mechanics' apprentices; but, as the arrangements are adequate for at least 800 pupils in each branch, no applicants will be rejected, unless the rooms are crowded, in which case the preference will be given to the working classes. The instruction will be entirely free, but will be systematic, and continued orally, and by text-books and recitations from about the 1st of November until the 1st of June. Only persons entering for the course will be received in any of these classes; but the public will be permitted to occupy the vacant seats at any of the lectures.

The instruction in Chemistry will be given by Prof. John C. Draper; in Mathematics, by Prof. B. S. Hedrick; in Mechanical Philosophy by Prof. L. Reuben.

The Drawing Classes will be under the charge of competent instructors in the several branches, with especial reference to the business of the pupils.

The instruction in Music will be given by Dr. Chas. Guilmette, and will consist of Physiology, Pathology, and Hygeine, as pertaining to the vocal and respiratory systems, classical *solfeggi*, vocalization, and lyrical declamation.

On Saturday evening, one lecture room will be at the disposal of the students, for the purposes of debate and mutual instruction.

Applicants for admission to any or all these classes will register their names, ages, (which must not be less than sixteen years, except by special permission) and residence, with a certificate of good moral character, without delay, at the office of the Union, between the hours of 9 and 10 A. M., and on Saturday evenings from 6 to 8, when tickets of admission will be issued.

In these departments no preliminary education will be required, except such as may be acquired at the public night schools, as the courses given in the Union are intended to impart such instruction only as cannot be got elsewhere by night, without charge.

4.—FREE PUBLIC LECTURES.

The Trustees are making arrangements, which will be announced hereafter, for a course of free lectures, on topics of a useful character and general interest, to be delivered in the great hall of the Union on Monday evening of each week. No charge will be made for admission, but tickets will be given to such persons only as shall apply for the same at the office in advance.

5.—SOCIETY OF THE ASSOCIATES.

By the Eighth Section of Charter it is provided as follows:

The Trustees of the Corporation, hereby created, may at anytime associate with themselves such persons as they shall see fit, as members of the Corporation hereby created, and with such persons organize a Society, with the style and title of the "Associates of the Cooper Union for the Advancement of Science and Art," the object and purposes of which shall be the encouragement of Science, Arts, Manufactures, and Commerce; the bestowal of rewards for such productions, inventions and improvements as tend to the useful employment of the poor, the increase of trade, and the riches and honor of the country; for meritorious works in the various departments of the fine arts; for discoveries, inventions and improvements; and generally, by lectures, papers and discussions thereon, and other suitable means to assist in the advancement, development and practical application of every department of science in connection with the arts, manufactures and commerce of the country. The said Society shall consist of the said associates, the graduates of the institution hereby incorporated, whose diplomas may include such rights and privileges, and of such other persons as from time to time shall be elected members thereof, always including the members of the Board of Trustees of the "Cooper Union for the Advancement of Science and Art," and all the members of the said society shall, while members thereof, be members of the Corporation hereby created. The said Board of Trustees shall, from time to time, prescribe the conditions and terms of membership of the said Society, which, subject to the approval of the said Board of Trustees, shall make all rules and regulations for its own conduct and government, pass its own by-laws and prescribe the duties and powers, and annual dues of its members and officers; and which said Society shall elect its own officers and members, and shall, from its members, annually elect a council consisting of at least twenty-four members of said Society, which said council is hereby authorized and empowered to do and perform all and every act and thing whatsoever, by it provided to be done and performed, in and by said deed.

As this Society has the right of visitation of the entire institution, the Trustees are desirous that it shall be a large, respectable and influential organization, representing all classes in the community. The Society will have the free use of the great hall of the Union one night in each week, and many other important privileges. It is expected to correspond nearly with the Society of Arts in London, which has been productive of so much benefit to the industry of Great Britain. As it will be difficult, if not impossible, for the Trustees to make a selection, which would not be open to criticism, they propose to address a circular to the members of the leading literary, scientific, artistic, and industrial associations of this city, inviting them to become the original "Associates of the Union," thus realizing practically the idea of Mr. Cooper in the selection of the title of the Corporation. The members over 21 years of age of the following societies, among others, will be thus invited: The Society of Mechanics and Tradesmen, the Chamber of Commerce, the Historical Society, the American Geographical and Statistical Society, the Society Library, Mercantile Library and Clinton Hall Association, the Alumni, associates, trustees and professors of Columbia College; the New York University, and the Free Academy; the American Institute, the Mechanics' Institute, the Horticultural Society, the American Institute of Architects, the Photographic Society, the National Academy of Design, the Century, the Atheneum, the Lyceum of Natural History, the Law Institute, the Academy of Medicine, the Sanitary Association, the Clergy of New York, and the Teachers in the Public Schools.

The original associates will make such rules and regulations for future admission of members, and the organization of the Society, as they may see fit, subject to the conditions of the charter.

7.—DEDICATION.

The public dedication of the "Union" will take place in June next, by which time it is to be hoped that all the departments of the Institution, except the Polytechnic School, will be in full operation.

By order of the Trustees,
JAMES T. HODGE, Assistant Sec'ry.
New York, Sept. 24, 1859.

The Greatest Cannon Yet.

The English papers tell us that it has been demonstrated that the Armstrong gun will send a ball with remarkable accuracy a distance of five miles. But this is nothing to the range of another gun, of which we have the following account in the same journals:

A most wonderful long range cannon, invented by Mr. Jeffries, patentee of the well known marine glue, is in course of being mounted in the Royal Arsenal, Woolwich, for experiments at Shoeburyness. Its range is spoken of as certain to eclipse every other weapon hitherto known. The gun, with its present bore, a three-inch diameter, weighs seven tons, and presents an appearance (with the exception of the present calibre) similar to one of our 68-pounders. The charge will consist of sixteen pounds of powder, and a conically shaped shot, weighted with lead to nine pounds, and hollowed similarly to the Minie bullet, which it is presumed will be propelled fifteen or twenty miles. Mr. Jeffries, it is stated, has asserted his conviction that it would carry from Dover to Calais. It is the intention of the authorities to carry out a varied and complicated course of experiments under the inspection of the Select Committee of Woolwich Arsenal. After being satisfied of its power in its present form, the bore will be progressively increased to a 68-pounder. To enable the gunners to point the gun, the trunnions will be fitted with a couple of telescopes, to assist the eye over the enormous range predicted.

With a few such guns on a ship like the Great Eastern, New York could be bombarded from Sandy Hook, or Flushing Bay!

It would appear that the Cincinnati Tract Society—an anti-Slavery concern—is either inadequate to the wants, or does not fully meet the views of that portion of the Western people who oppose the principles and management of the American Tract Society of this city. To supply this deficiency, or perhaps with a view to extend the operations of those who are working against the last named Association, a number of persons at the West have undertaken the project of starting a new Tract Society at Chicago.